

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A laser beam scanner for forming a scanning line along a main-scanning direction with a laser beam, comprising:

a laser diode that emits ~~a~~the laser beam;

a first converging unit that converges the laser beam in a main-scanning direction;

a second converging unit that converges the laser beam, that has been converged by the first converging unit, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

a scan start time determination unit that detects, within a predetermined detection area, the laser beam that has been converged by the first converging unit before being converged by the second converging unit, and determines a scan start time upon the detection of the laser beam;

a photosensitive medium on which a scanning line is formed along the main-scanning direction; and

a scan controller that controls a start of, at the determined scan start time, scanning the photosensitive medium with the laser beam that has been converged by the first converging unit and the second converging ~~unit~~unit;

a first deflector that deflects the laser beam emitted by the laser diode to the first converging unit; and

a third converging unit that converges, in the sub-scanning direction, the laser beam that has been converged by the first converging unit and traveling to the scan start time determination unit, so that the laser beam falls within the predetermined detection area of the

scan start time determination unit, wherein a first traveling distance of the laser beam along an optical axis between the first deflector and the scan start time determination unit is greater than or equal to four times a focal length of the third converging unit.

2-3. (Canceled).

4. (Currently Amended) The laser beam scanner as claimed in ~~claim 3~~, claim 1, further comprising a ~~forth~~ fourth converging unit that converges the laser beam emitted by the laser diode onto the first deflector, wherein the third converging unit and the ~~forth~~ fourth converging unit are formed of a same component.

5. (Currently Amended) The laser beam scanner as claimed in ~~claim 3~~, claim 1, wherein the third converging ~~unit~~ unit, acting as a fourth converging unit, converges the laser beam emitted by the laser diode onto the first deflector, and, as the third converging unit, converges the laser ~~diode beam~~ beam that has been converged by the first converging unit onto the scan start time determination unit.

6. (Currently Amended) The laser beam scanner as claimed in ~~claim 3~~, claim 1, further comprising a slit having a predetermined length along the sub-scanning direction, the laser beam passing through the slit toward the scan start time determination unit after being converged by the first converging unit and the third converging unit, wherein the third converging unit converges the laser beam in the sub-scanning direction so that the laser beam falls within the slit.

7. (Currently Amended) The laser beam scanner as claimed in ~~claim 5~~, claim 6, wherein the third converging unit converges the laser beam in the sub-scanning direction onto the scan start time determination unit with a deviation from an optical axis of the laser beam, the deviation being smaller than or equal to a half of the predetermined length.

8. (Original) The laser beam scanner as claimed in claim 7, wherein a second traveling distance of the laser beam along an optical axis between the first deflector and the

third converging unit is a half of a first traveling distance of the laser beam along the optical axis between the first deflector and the scan start time determination unit.

9. (Canceled).

10. (Original) The laser beam scanner as claimed in claim 4, further comprising a second deflector that deflects the laser beam that has been converged by the first converging unit toward the third converging unit.

11. (Currently Amended) A laser beam scanner for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

beam emitting means for emitting a laser beam;

first deflecting means for deflecting the laser beam;

first converging means for converging the laser beam in a main-scanning direction;

second converging means for converging the laser beam, converged by the first converging means, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

scan start time determination means for detecting the laser beam converged by the first converging means, before being converged by the second converging means, within a predetermined detection area and determining a scan start time; and

scan controlling means for controlling a start of scanning of a photosensitive medium, at the determined scan start time, with the laser beam converged by the first converging means and the second converging means, thereby forming a scanning line on the photosensitive medium along the main-scanning ~~direction~~direction; and

third converging means for converging, in the sub-scanning direction, the laser beam that has been converged by the first converging means and traveling to the scan start time determination means, so that the laser beam falls within the predetermined detection area

of the scan start time determination means, wherein a first traveling distance of the laser beam along an optical axis between the first deflecting means and the scan start time determination means is greater than or equal to four times a focal length of the third converging means.

12. (Canceled).

13. (Currently Amended) A method for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

emitting a laser beam;

deflecting the laser beam for scanning in a main-scanning direction;

converging the laser beam in ~~a~~ the main-scanning direction;

detecting the laser beam that has been converged in the main-scanning direction within a predetermined detection area, and determining a scan start time;

converging the laser beam, that has been converged in the main-scanning direction, before reaching a photosensitive medium, in a sub-scanning direction substantially perpendicular to the main-scanning direction; ~~and~~

controlling a start of scanning of the photosensitive medium, at the determined scan start time, with the laser beam that has been converged in the main-scanning direction and in the sub-scanning direction, thereby forming a scanning line on the photosensitive medium along the main-scanning ~~direction-direction~~, and

converging the laser beam that has been converged in the main-scanning direction, before being detected in the detection step, in the sub-scanning direction, so that the laser beam falls within the predetermined detection area, wherein a first traveling distance of the laser beam along an optical axis between the deflecting and the detecting is greater than or equal to four times a focal length of a converging unit that converges the laser beam in the sub-scanning direction.

14. (Canceled).

15. (New) A laser beam scanner for forming a scanning line along a main-scanning direction with a laser beam, comprising:
- a laser diode that emits the laser beam;
 - a first converging unit that converges the laser beam in a main-scanning direction;
 - a second converging unit that converges the laser beam, that has been converged by the first converging unit, in a sub-scanning direction substantially perpendicular to the main-scanning direction;
 - a scan start time determination unit that detects, within a predetermined detection area, the laser beam that has been converged by the first converging unit before being converged by the second converging unit, and determines a scan start time upon the detection of the laser beam;
 - a photosensitive medium on which a scanning line is formed along the main-scanning direction;
 - a scan controller that controls a start of, at the determined scan start time, scanning the photosensitive medium with the laser beam that has been converged by the first converging unit and the second converging unit;
 - a first deflector that deflects the laser beam emitted by the laser diode to the first converging unit;
 - a third converging unit that converges, in the sub-scanning direction, the laser beam that has been converged by the first converging unit and traveling to the scan start time determination unit, so that the laser beam falls within the predetermined detection area of the scan start time determination unit; and
 - a slit having a predetermined length along the sub-scanning direction, the laser beam passing through the slit toward the scan start time determination unit after being

converged by the first converging unit and the third converging unit, wherein the third converging unit converges the laser beam in the sub-scanning direction so that the laser beam falls within the slit and onto the scan start time determination unit with a deviation from an optical axis of the laser beam, the deviation being smaller than or equal to a half of the predetermined length.

16. (New) The laser beam scanner as claimed in claim 15, further comprising a fourth converging unit that converges the laser beam emitted by the laser diode onto the first deflector, wherein the third converging unit and the fourth converging unit are formed of a same component.

17. (New) The laser beam scanner as claimed in claim 15, wherein the third converging unit, acting as a fourth converging unit, converges the laser beam emitted by the laser diode onto the first deflector, and, as the third converging unit, converges the laser beam that has been converged by the first converging unit onto the scan start time determination unit.

18. (New) The laser beam scanner as claimed in claim 15, wherein a second traveling distance of the laser beam along an optical axis between the first deflector and the third converging unit is a half of a first traveling distance of the laser beam along the optical axis between the first deflector and the scan start time determination unit.

19. (New) The laser beam scanner as claimed in claim 16, further comprising a second deflector that deflects the laser beam that has been converged by the first converging unit toward the third converging unit.

20. (New) A laser beam scanner for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

beam emitting means for emitting a laser beam;

first deflecting means for deflecting the laser beam;

first converging means for converging the laser beam in a main-scanning direction;

second converging means for converging the laser beam, converged by the first converging means, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

scan start time determination means for detecting the laser beam converged by the first converging means, before being converged by the second converging means, within a predetermined detection area and determining a scan start time;

scan controlling means for controlling a start of scanning of a photosensitive medium, at the determined scan start time, with the laser beam converged by the first converging means and the second converging means, thereby forming a scanning line on the photosensitive medium along the main-scanning direction;

third converging means for converging, in the sub-scanning direction, the laser beam that has been converged by the first converging means and traveling to the scan start time determination means, so that the laser beam falls within the predetermined detection area of the scan start time determination means; and

a slit having a predetermined length along the sub-scanning direction, the laser beam passing through the slit toward the scan start time determination means after being converged by the first converging means and the third converging means, wherein the third converging means converges the laser beam in the sub-scanning direction so that the laser beam falls within the slit and onto the scan start time determination means with a deviation from an optical axis of the laser beam, the deviation being smaller than or equal to a half of the predetermined length.

21. (New) A method for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

emitting a laser beam;

deflecting the laser beam for scanning in a main-scanning direction;

converging the laser beam in the main-scanning direction;

detecting the laser beam that has been converged in the main-scanning direction within a predetermined detection area, and determining a scan start time;

converging the laser beam, that has been converged in the main-scanning direction, before reaching a photosensitive medium, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

controlling a start of scanning of the photosensitive medium, at the determined scan start time, with the laser beam that has been converged in the main-scanning direction and in the sub-scanning direction, thereby forming a scanning line on the photosensitive medium along the main-scanning direction,

converging the laser beam that has been converged in the main-scanning direction, before being detected in the detecting step, in the sub-scanning direction, so that the laser beam falls within the predetermined detection area; and

passing the laser beam through a slit toward the scan start time determination unit after being converged in the main scanning direction and the sub-scanning direction before being detected in the detecting step so that the laser beam falls within the slit and a deviation from an optical axis of the laser beam is smaller than or equal to a half of the predetermined length.

22. (New) A laser beam scanner for forming a scanning line along a main-scanning direction with a laser beam, comprising:

a laser diode that emits the laser beam;

a first converging unit that converges the laser beam in a main-scanning direction;

a second converging unit that converges the laser beam, that has been converged by the first converging unit, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

a scan start time determination unit that detects, within a predetermined detection area, the laser beam that has been converged by the first converging unit before being converged by the second converging unit, and determines a scan start time upon the detection of the laser beam;

a photosensitive medium on which a scanning line is formed along the main-scanning direction;

a scan controller that controls a start of, at the determined scan start time, scanning the photosensitive medium with the laser beam that has been converged by the first converging unit and the second converging unit;

a first deflector that deflects the laser beam emitted by the laser diode to the first converging unit; and

a third converging unit that converges, in the sub-scanning direction, the laser beam that has been converged by the first converging unit and traveling to the scan start time determination unit, so that the laser beam falls within the predetermined detection area of the scan start time determination unit; and

a fourth converging unit that converges the laser beam emitted by the laser diode onto the first deflector, wherein the third converging unit and the fourth converging unit are formed of a same component.

23. (New) The laser beam scanner as claimed in claim 22, wherein the third converging unit, acting as a fifth converging unit, converges the laser beam emitted by the laser diode onto the first deflector, and, as the third converging unit, converges the laser beam

that has been converged by the first converging unit onto the scan start time determination unit.

24. (New) The laser beam scanner as claimed in claim 22, further comprising a slit having a predetermined length along the sub-scanning direction, the laser beam passing through the slit toward the scan start time determination unit after being converged by the first converging unit and the third converging unit, wherein the third converging unit converges the laser beam in the sub-scanning direction so that the laser beam falls within the slit.

25. (New) The laser beam scanner as claimed in claim 24, wherein the third converging unit converges the laser beam in the sub-scanning direction onto the scan start time determination unit with a deviation from an optical axis of the laser beam, the deviation being smaller than or equal to a half of the predetermined length.

26. (New) The laser beam scanner as claimed in claim 25, wherein a second traveling distance of the laser beam along an optical axis between the first deflector and the third converging unit is a half of a first traveling distance of the laser beam along the optical axis between the first deflector and the scan start time determination unit.

27. (New) The laser beam scanner as claimed in claim 22, wherein a first traveling distance of the laser beam along an optical axis between the first deflector and the scan start time determination unit is greater than or equal to four times a focal length of the third converging unit.

28. (New) The laser beam scanner as claimed in claim 22, further comprising a second deflector that deflects the laser beam that has been converged by the first converging unit toward the third converging unit.

29. (New) A laser beam scanner for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

beam emitting means for emitting a laser beam;

first converging means for converging the laser beam in a main-scanning direction;

second converging means for converging the laser beam, converged by the first converging means, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

scan start time determination means for detecting the laser beam converged by the first converging means, before being converged by the second converging means, within a predetermined detection area and determining a scan start time;

scan controlling means for controlling a start of scanning of a photosensitive medium, at the determined scan start time, with the laser beam converged by the first converging means and the second converging means, thereby forming a scanning line on the photosensitive medium along the main-scanning direction;

third converging means for converging, in the sub-scanning direction, the laser beam that has been converged by the first converging means and traveling to the scan start time determination means, so that the laser beam falls within the predetermined detection area of the scan start time determination means;

first deflecting means for deflecting the laser beam emitted by the beam emitting means to the first converging means; and

fourth converging means for converging the laser beam emitted by the beam emitting means onto the first deflecting means, wherein the third converging means and the fourth converging means are formed of a same component.

30. (New) A laser beam scanner for forming a scanning line along a main-scanning direction with a laser beam, comprising:

a laser diode that emits the laser beam;

a first converging unit that converges the laser beam in a main-scanning direction;

a second converging unit that converges the laser beam, that has been converged by the first converging unit, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

a scan start time determination unit that detects, within a predetermined detection area, the laser beam that has been converged by the first converging unit before being converged by the second converging unit, and determines a scan start time upon the detection of the laser beam;

a photosensitive medium on which a scanning line is formed along the main-scanning direction;

a scan controller that controls a start of, at the determined scan start time, scanning the photosensitive medium with the laser beam that has been converged by the first converging unit and the second converging unit;

a first deflector that deflects the laser beam emitted by the laser diode to the first converging unit; and

a third converging unit that converges, in the sub-scanning direction, the laser beam that has been converged by the first converging unit and traveling to the scan start time determination unit, so that the laser beam falls within the predetermined detection area of the scan start time determination unit, wherein the third converging unit, acting as a fourth converging unit, converges the laser beam emitted by the laser diode onto the first deflector, and, as the third converging unit, converges the laser beam that has been converged by the first converging unit onto the scan start time determination unit.

31. (New) A laser beam scanner for forming a scanning line on a photosensitive medium along a main-scanning direction with a laser beam, comprising:

beam emitting means for emitting a laser beam;

first converging means for converging the laser beam in a main-scanning direction;

second converging means for converging the laser beam, converged by the first converging means, in a sub-scanning direction substantially perpendicular to the main-scanning direction;

scan start time determination means for detecting the laser beam converged by the first converging means, before being converged by the second converging means, within a predetermined detection area and determining a scan start time;

scan controlling means for controlling a start of scanning of a photosensitive medium, at the determined scan start time, with the laser beam converged by the first converging means and the second converging means, thereby forming a scanning line on the photosensitive medium along the main-scanning direction;

third converging means for converging, in the sub-scanning direction, the laser beam that has been converged by the first converging means and traveling to the scan start time determination means, so that the laser beam falls within the predetermined detection area of the scan start time determination means; and

first deflecting means for deflecting the laser beam emitted by the beam emitting means to the first converging means, wherein the third converging means, acting as a fourth converging means, converges the laser beam emitted by the beam emitting means onto the first deflecting means, and, as the third converging means, converges the laser beam that has been converged by the first converging means onto the scan start time determination means.